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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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COUNTRY East Germany

SUBJECT Progress Reports on the Development of Ship-Borne Radar at RFT Funkwerk Koepenick

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1. In an application for the extension for the year 1954 of plan research order No. K3-30 concerning the development of a ship-borne radar device (anti-collision instrument) by Department TEE of Funkwerk Koepenick, the order is characterized by the following technical specifications:
 - a. K3-30: Kollisionsschutzgeraet.
 - b. Rotating mirror on the masthead of the ship.
 - c. Transmission, receiving, and image devices will be installed in the radio office.
 - d. Second image device (Daughter device) will be installed in the map office.
 - e. Resolving power from 500 meters on about 150 meters (sic).
 - f. Range about 30 kilometers against a reflection area of 0.5 square meters.
 - g. Wave length: 3.2 centimeters.
2. Of 1,050,000 DME approved for the development of the device in 1953, 530,000 DME had been spent by 30 June 1953. For 1954, 820,000 DME have been approved.
3. Progress of the development during the first eight months of 1953 is outlined in the following extracts from the monthly progress reports on the project, including the difficulties encountered in the course of the development, particularly in the procurement of material and parts. The January 1953 progress report summarizes the status of the development as of the end of 1952.
 - a. January 1953:

The situation appears rather satisfactory from the point of view of laboratory development. Progress made so far is rather good in view of the poor equipment and material available to the laboratory. However, one should not deceive oneself about the

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prospects of further progress, which are very bad because support from the delivery firms cannot be counted on. As long as we cannot force the delivery firms to engage in the development and fabrication of parts to be delivered, the situation for the design and construction of a laboratory model will not improve. Only through extreme efforts of all concerned will it be possible to bring the development of the devices to such a point by 1 July 1953 that everything will be available for the start of production. Only if the construction elements most urgently needed are made available during the first quarter of 1953 in suitable quality and sufficient quantities, and only if the measurement devices are delivered on schedule, can the plan as scheduled for the year be carried out. Due to the lack of adequate measurement terrain, difficulties must also be expected with respect to the measuring of the antennas. The measurement field available here can only serve for measurements of an informative character. It cannot yet be determined if there will be material shortages in the development of impulse accessories. Difficulties are to be expected because no centimeter tubes are available at present. Furthermore, we obtain key tubes and impulse power tubes of insufficient quality only because the HF plant gives priority to its other delivery obligations. The situation as described summarizes the development carried out so far in department TEF. The Manthey laboratory was transferred to department TEE at the beginning of the year.

b. February 1953

<u>Development progress since 1 January 1953</u>	<u>Degree of Completion in Percent</u>
Power line	15
Transmission-reception simultaneous connection	10
Pre-amplifier	15
Intermediate frequency main amplifier	10
Retune amplifier	20
Control parts	5
Construction and trial of installation	10
<u>Development since the beginning of the project</u>	
Testing circuit	75
Stub	50
Mains set	5

The network devices are urgently needed; quick delivery of laboratory samples from TKO is urgently requested.

Echo box fine-wave-meter	80
Coarse-wave-meter	60
Terminal resistances	65
Damping circuit	60
Input voltmeter	45
Measurement parabola	30

No information has been received on the fabrication of parabolas. Quick fabrication is urgently requested, since measurement parabolas are needed within a month for aerial measurements.

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Construction racks	0
Calorimetric power meter	0

Construction of power meters cannot be carried out because the question of delivery of thermometers has not been clarified. They must be procured by 10 February by Colleague Steinbacher.

Klystron generator	0
Tuning slide	0
Reactor	25
Absolute-wave-meter	0

The order is being reviewed since a suitable wave-meter will be available after delivery of the spectrometer.

Line elements	50
Mains parts	0

Colleague Kruger of Department TKK notified us that Colleague Director Pfeil will not approve the hiring of new personnel. Since there are only sixteen colleagues in TKK, we cannot guarantee to meet the established completion deadlines. There are difficulties in the procurement of flanges for the measurement devices and line elements. Colleague Steinbacher is trying to procure the 200 flanges still missing. In order to expedite current work on the anti-collision instrument, especially the procurement of measurement devices, valves, hollow tubings and permanent magnets, priority request by Z-application is urgently needed.

c. March 1955

Work delay: klystron.

If the development costs can be made available to the H¹ plant, earliest delivery will be possible in the fourth quarter 1955. If the Z-application should not succeed, the project must be returned.

	Degree of completion in Percent
Power conduct	20
Procurement of flexible hollow tubing from the Vacha firm.	
Transmission-reception simultaneous connection	20
Pre-amplifier	20
Intermediate frequency main amplifier	20
Retune amplifier	25
Control parts	no change
Testing circuit	30
Stub	60
Mains set in development, completed to	60
Course wave meter	70
Terminal resistances	100
Damping circuit	60
Input voltmeter	60
Measurement parabola	50
Construction racks	100
Power meter	3

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Klystron generator	10
Tuning slide	10
Reactor	45
Absolute-wave-meter	0

The order has been withdrawn since we are able to determine accurately the frequency with available measurement devices.

Line elements	60
Mains parts	15

d. April 1953

Flexible joining pieces from hollow tubing are needed for connecting the devices. Delivery is hampered at present by difficulties with foils. Colleague Richter has procured foils of 50 microns and has sent them, together with 10 flanges, to the Vacha Cable Factory for the fabrication of flexible tubing. The first tests with the second construction of the antenna rotating joint were successful. The construction measurement data have been turned over to Colleague Senz of the antenna construction section. The antenna department has parabolic mirrors for measurement purposes. For the focussing system (horn), an air-proof shutter is needed. Colleague Proissner of TEE, in cooperation with Colleague Beyer of the Purchasing Department, is to arrange for the procuring of foam agent (Schaumstoff).

Degree of Completion
in Percent

Power line	40
Transmission-reception simultaneous connection	30
Pre-amplifier	40
Intermediate frequency main amplifier	30
Retune amplifier	40
Control parts	20
Construction and trial of installation	30
Testing circuit	100
Stub	70
Mains set	in development, completed to 90
Coarse-wave-meter	70
Terminal resistances	100
Damping circuit	65
Input voltmeter	70
Measurement parabola	Was reported as completed
Construction racks	Were reported as completed
Power meter	20
Klystron generator	65
Tuning slide	40
Reactor	70
Line elements	75
Mains parts	35

e. July 1953

Difficulties are still being experienced with the klystron network devices. The difficulties are caused by frequency variations of the network. Elimination of the difficulties through the use of iron-hydrogen resistances is not possible at present. Colleague Kahl of TEE has contacted the HF plant in connection with the delivery of klystrons. He was informed that no order has been placed thus far and no indication given how many instruments are needed. Colleague Kahl will secure the order from the Purchasing Department and again contact the HF plant and HV RPT

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if necessary. A water power meter was received and tested. It was stated that it has an efficiency degree of only 72 percent. Trolital of 10 millimeter wall thickness was tested for the horn radiator; good adaption was obtained. The directional pattern was focussed too sharply. Measurements continue to be inaccurate. Attempts will be made to shorten the horn. Measurements undertaken in TEA are not progressing at the desired rate of speed because of difficulties connected with the measurement devices which, in turn, are the result of using klystrons which are too weak. The first castings of the antenna mirrors have arrived. There, deviations of about 8 millimeters from the projected model have occurred. The TELG workshop will try to improve the mirrors. The model for the foundry will be changed so that later deformities will be compensated for. TEA will then measure the directional diagrams with the improved mirror. We expect results about two weeks after the arrival of the mirror.

f. 30 August 1953

Degree of Completion
in Percent

Transmission-reception simultaneous connection	70
Main amplifier	60
Pre-amplifier	70
Retune amplifier	70
Control parts	50
Construction and trial of installation	35

Colleague Kahl talked with Dr. Schiller of the HF plant about the delivery of klystrons. The HF plant has not yet received notification of the approval for 40,000 DME. Dr. Schiller promised to process the matter immediately after receiving the approval. Colleague Kahl will immediately contact HV RFT and request that the approval be forwarded. Colleague Schiller, however, did not leave us any hope for delivery before the end of eight months, even though special measures should be taken. Dr. Schiller was not informed on details about import of thermistors. Colleague Ballmann of the Sales Department referred us to DIA. Colleague Kahl will immediately contact Colleague Standfuss of DIA and see to it that at least ten thermistors from import deliveries are made available to us. Colleague Manthey has requested a number of cases for the measurement devices, which are not being kept properly. Colleague Kahl will try to procure a number of cases as soon as possible.

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1. Comment: VFB Kabelwerk Vacha.

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